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THE CONTINUITY OF EVOLUTION.

THE SCIENCE OF LANGUAGE VERSUS THE SCIENCE OF LIFE,

AS REPRESENTED BY PROF. F. MAX MÜLLER AND PROF.
GEORGE JOHN ROMANES.

ALL the sciences form, or at least ought to form, one great system, culminating in the science of sciences. Therefore it is more than doubtful how any science could exist without being somehow in contact with other sciences ; and all of them must stand in some relation to philosophy. It is necessary that each science should develop in relative independence of the other sciences. We cannot expect to decide, for instance, chemical problems by physical or purely mechanical laws before we have carefully searched the nature and conditions of chemical processes. But as soon as this has been done we can expect that a comparison between the results of two or more sciences will throw new light upon the subject-matter on both sides. Solomon says : “To everything there is a season and a time to every purpose under the heaven.” Thus the sciences have to grow, each one on its own grounds, and when they have reached a certain state of maturity, they will coalesce with each other. And two sciences will by their coalescence fertilise the one the other so as to produce a new department which may by and by develop into a special science.

Now it appears to the uninitiated as if the spiritual world of science were in every respect different from the world of objective realities around us. While in the world of bodily realities the struggle

for existence is fought eternal peace is supposed to reign in the sacred halls of intellectual aspirations. Says the German poet :

*“ Hart in dem Raume stossen sich die Körper,
Leicht bei einander wohnen die Gedanken.”*

This is true only in a very limited sense. Ideas are the most intolerant beings imaginable. The struggle for existence is raging as fiercely in the intellectual realm as in the world of realities, and there also the law that the fittest will survive holds good.

Far be it from us to denounce this state of general warfare, for although it is hard on those who succumb, it is the means by which evolution becomes possible ; and evolution in the domain of science means a nearer approach to truth. If in the evolution of thought two neighboring sciences have developed so far as to meet, a struggle will ensue. The ideas on the two sides will have to fight before they coalesce. It is natural that different scientists look at things from different standpoints. They have developed a terminology which exactly suits their purpose and thus the representatives of the different sciences are often like people of a different nationality. They do not understand each other because they speak different languages. Moreover they have not unfrequently a different religion ; that means, their ideas about truth and the test of truth appear to be different and sometimes they regard one another as no better than heathens. The battle is unavoidable, and considering all in all, the battle is desirable, it should not be avoided. The fittest to survive being the truest, the whole progress of science through the struggle for existence among ideas consists in the approach to truth.

It may be objected that there are peacemakers who will reconcile the contending parties. True. And it is further true that the aim of every war is peace. But a peacemaker can be successful only if his mind is broad enough to let the whole battle be fought out within himself. The battle itself is and will remain unavoidable. Idea stands against idea, and the mental process of reflection is nothing but a struggle of conflicting ideas which takes place in one and the same mind. The aim of all reflection is the settlement of the conflict, so that all ideas will agree. The two parties disappear

in one; errors are given up, and that which is consistent only will remain. In other words Dualism makes room for Monism.

It is a good sign of the times that a battle has begun to rage between the so-called natural sciences and the science of language. The old Hegelian distinction between the *Geisteswissenschaften* and the *Naturwissenschaften* has been surrendered; and Prof. F. Max Müller was among the foremost to inculcate the truth that philology is a natural science. If philology is a natural science it cannot be but that its subject of investigation is a part of nature and as such it stands in close relation to other parts of nature. One and the same thing may be the subject of investigation of different sciences. One and the same plant may be an object of observation to the physiologist, to the botanist, to the druggist, to the physician, and to the chemist. Their standpoints and their purposes being different, they will bring to light very different results, and if these results are contradictory among each other the conflict is at hand. It cannot be shirked but must be decided by an honest and square fight. We have witnessed of late a conflict between philology and anthropology concerning the origin of the Aryas and it looks as if this conflict will contribute much to promote our knowledge of the oldest history of mankind, although the last word has not as yet been spoken: *adhuc sub judice lis est*.

We are now confronted with a conflict between Philology and Biology. The first skirmishes have been fought by two men who are entitled to speak, each one in behalf of his science. Prof. F. Max Müller stands up for philology and Prof. George John Romanes for biology.

Professor Romanes takes it for granted that the rational mind of man has developed gradually from the lower stage of the brute. He says in his book "Mental Evolution in Man," p. 276:

"The whole object of these chapters has been to show, that on psychological grounds it is abundantly intelligible how the conceptual stage of ideation may have been gradually evolved from the receptual—the power of forming general, or truly conceptual ideas, from the power of forming particular and generic ideas. But if it could be shown—or even rendered in any degree presumable—that this distinctly human power of forming truly general ideas arose *de novo* with the first birth of

articulate speech, assuredly my whole analysis would be destroyed: the human mind would be shown to present a quality different in origin—and, therefore, in kind—from all the lower orders of intelligence: the law of continuity would be interrupted at the terminal phase: an impassable gulf would be fixed between the brute and the man."

And Prof. Max Müller criticises the position of Professor Romanes in an article on Thought and Language (*The Monist*, Vol. I. No. 4, p. 582); he says:

"My learned friend, Professor Romanes, labors to show that there is an unbroken mental evolution from the lowest animal to the highest man. But he sees very clearly and confesses very honestly that the chief difficulty in this evolution is language and all that language implies. He tries very hard to remove that barrier between beast and man. . . . Professor Romanes is, I believe, a most eminent biologist, and the mantle of Darwin is said to have fallen on his shoulders. Far be it from me to venture to criticise his biological facts. But we see in his case how dangerous it is for a man who can claim to speak with authority on his own special subject, to venture to speak authoritatively on subjects not his own."

It is not at all my intention to appear on the battle-field as a peacemaker between these two generals, or to settle the problems that arise from the conflict between philology and biology. That will be better done by the parties concerned, and I am rather inclined to speak with Schiller when he thought of the struggle between the transcendentalist philosopher and the empirical naturalist:

"Enmity be between you! Your alliance would not be in time yet.

Though you may separate now, Truth will be found by your search."

I look forward with great interest to further discussions which will bring out with more clearness the positions of both parties, and it is not impossible that both parties as soon as they have better understood each other, will agree much better than either of them expected. But it may be permitted me to make a few comments upon a proposition that is involved in this conflict, which, however, properly considered, is neither of a philological nor a biological nature. This is the idea of the continuity of evolution. Prof. Max Müller says somewhere that, if a Darwinian means an evolutionist, he had been a Darwinian long before Darwin. "How a student of the science of language," he says, "can be anything but

an evolutionist is to me utterly unintelligible." So there is no doubt about his being an evolutionist as much as Professor Romanes. But the question is, What means evolutionist? Is he an evolutionist who believes in a piecemeal evolution interrupted here and there by acts of special creation? In my conception of the term, an evolutionist believes in evolution wherever there is life and this involves the wholesale rejection of special-creation acts as well as of the idea that any being or organism (the organism of language included) could ever have made its appearance in full growth and maturity or that any phenomenon of life could present a break in the continuity of evolution.

The Greek myth tells us that the Goddess of Reason, the blue-eyed Pallas Athene, was not born like other gods and mortals in the natural way of a slow development. She jumped out of the head of Zeus full-armed in all her beauty and gifted with the powers of her unusual accomplishments. Is this myth true after all? Does the Logos of rational thought present us with an instance in which the development process has been interrupted? If so, we shall have to abandon the evolution theory as a theory and return to the old-fashioned view of special-creation acts. The difference between these two views is not of degree, but of kind. He who accepts the principle of evolution as the law of life abandons forever the idea of special and unconnected beginnings as much as that of special-creation acts. He cannot with consistency believe in an evolution with interruptions, for the theory of evolution is serviceable only if evolution is conceived as continuous. Prof. Max Müller of course has a right to define and use the word evolutionist as he sees fit, but if he excludes continuity from the idea of evolution, we declare that he has taken out the quintessence of its meaning and the core of its truth.

Why this is so, we shall now briefly discuss.

The evolution theory has been gradually developed by empirical investigations and it owes its all but universal acceptance to the great mass of *a posteriori* evidence furnished by the natural sciences. It rests nevertheless upon a better and safer foundation than isolated instances of hap-hazard experience. Its foundation is

quarried out of another and more reliable material. The evolution theory rests upon the ground of *a priori* arguments.

By *a priori* we do not understand anything mysterious, but simply such cognition as possesses universality and necessity. That cognition which is in possession of universality and necessity is also called formal cognition. The formal sciences (for instance arithmetic, mathematics, pure logic, and pure mechanics) give us information about such truths as are applicable, because they are purely formal, to the formal conditions of anything and everything possible. Because we know *beforehand* that the purely formal laws will hold good under all conditions Kant called their formulated theorems "a priori." All the objections to the idea of apriority made by John Stuart Mill and other empiricists are due to their misinterpretation of the term.*

Mr. Mill was mistaken when he thought Kant meant *a priori* cognitions were innate ideas which came to man from spheres unknown. The very first sentence of Kant's "Critique of Pure Reason" proves that Kant knew of no other knowledge than that which begins with experience. Kant says, "That all our knowledge begins with experience there can be no doubt." But our knowledge consists of two elements, viz. the empirical and the formal. The former bears always the character of the special and incidental, the latter of the universal and necessary. The former is sensory, being furnished by the senses, the latter is properly mental originating in and with the action of the mind in dealing with sense-materials, in arranging them and bringing them into certain relations.

Formal knowledge is different in kind from empirical knowledge. The rule "twice two is four" will hold good for all possible cases, but the statement "A swan is white" does not hold good for all possible cases. European swans as a rule are white, but Australian swans are black, and for all we know, we might find swans that are blue, or red, or yellow. Empirical knowledge is full of exceptions, formal knowledge is rigid, there is no exception to any rule of formal knowledge.

* Compare the article *The Origin of Thought-Forms* in the present number, under the caption "Diverse Topics."

All formal knowledge has developed by degrees. The history of the sciences, of mathematics, logic, arithmetic, and also of the natural sciences furnishes sufficient evidence. The formal part of the natural sciences, by Kant called *reine Naturwissenschaft*, consists of such cognitions as the law of cause and effect and the law of the conservation of matter and energy. The formulation of these laws has been accomplished after much and careful empirical investigation. And it could not be otherwise. The latter law was elaborated in its full clearness long after Kant. The law of causality and the law of the conservation of matter and energy are purely formal, they are not sense-impressions and do not contain any sensory elements. They are general rules of universal applicability which being rigidly universal and without exceptions are necessary under all conditions. Before we make any experiment we can know that they will hold good in the experiment. Indeed all our experimenting is based upon the supposition that the law of causation holds good and that there can be neither an increase nor a decrease of matter and energy.

The mistake made by the so-called transcendentalists is this, that they consider formal thought as having an independent existence, being ready at hand before cognition is possible, while in fact it is a part of cognition which at least in its germ is present in every actual experience.

The theory of evolution is not more and not less a formal principle than the law of causation and the law of the conservation of matter and energy. Indeed it is nothing but the same thing applied to a special case. The theory of evolution is the principle of the conservation of matter and energy applied to the province of life. The theory of evolution denies the possibility of special acts of creation. There cannot come something out of nothing. And the new creations that actually originate daily before our eyes are not creations from nothing, they are simply transformations. There was a time on earth in which no living being existed, neither plant nor animal. How did life originate? Our answer is, It did not originate out of nothing, but it evolved. Non-organised matter organised. That non-organised matter must contain the elementary

conditions of organised life is a conclusion which we cannot escape from our point of view ; and which is fully and satisfactorily corroborated by our daily experience that water, earth, and air under the sun's influence are changed into wheat ; and wheat is manufactured into the bread which nourishes man and sustains his life. Non-organised particles of matter are constantly being organised in living organisms and displace the worn-out materials in their tissues—not one atom of the latter remaining for good in a healthy living body.

The theory of evolution may be called an hypothesis, an assumption, a presumption. But in that case we must say with Mill that the rule twice two is four is also a mere assumption. The evidence for the latter is not stronger than that for the former. Mill declares that after all twice two might somewhere be five. Exactly so and not otherwise evolution might be somewhere interrupted, so that something would originate out of nothing instead of evolving from other things through transformation.

Prof. Max Müller speaks very sarcastically about the speechless man, the *homo alalus* who is supposed to be the ancestor of the present man. He says (l. c., p. 585):

“Of the *Homo alalus*, the speechless progenitor of *Homo sapiens*, with whom Professor Romanes seems so intimately acquainted, students of human speech naturally know nothing.”

Prof. Max Müller also condemns all efforts of approaching the problem of the origin of language through observation of children and animals. The former he calls “nursery philology” the latter “menagerie psychology.” And it is certainly true that the problem of the origin of language cannot be solved from observations of children or animals, because the problem lies in another field. The problem is not how a ready made language is transferred upon the growing mind of a baby but how speechless beings developed into speaking beings. And all the intelligence of clever animals is still very different from the rational thought of man. This is true, but it is also true that good observations of animal psychology and also of nursery philology will throw some light upon the evolution of rational thought.

Prof. Max Müller says:

“How can we attempt to realise what passes within the mind of an animal? . . . We can imagine anything we like about what passes in the mind of an animal, —we can know absolutely nothing.”

We are fully aware of the fact that the problem of the origin of language is quite different from the problems of animal psychology. A solution of the latter, which are extremely complex and difficult, would not help us to solve the former. This being conceded we can nevertheless see no reason why animal psychology should be condemned and given up as a hopeless task.

It is not true that “we can know absolutely nothing about what passes in the mind of an animal.” It is true we cannot see the animals’ feelings and thoughts, but we can see their actions which reveal their feelings as much as and sometimes even plainer than the speech of our brother man reveals his thoughts. Might we not say with the same reason, “We see only the printed book of a scientist (which is an expression of his views as much as the behavior of an animal is of its feelings) but we can know absolutely nothing about what passes in the mind of that scientist. All we can do is to judge from analogy”? And should we on that account give up all reading and studying and also all arguing with others?

Animal psychology is not only justified as a science, but we can even hope that correct observations of animal intelligence will assist us in correctly understanding the higher intelligence of human thought. And “that some useful hints may be taken from watching children is not denied” by Prof. Max Müller either, although this little concession appears only in the shape of a short foot-note. The *homo alalus* is by no means a merely mythical figure, for according to the law of evolution man must have developed out of a being lower than the present man. His first ancestor must have been simple life-substance something like that of the *amœba*. He must have passed through a long period in which he was not capable of articulate speech. That we know nothing particular about the *homo alalus* is no proof against his existence. Moreover every infant is an actual real *homo alalus*, a speechless man, or should we according to Prof. Max Müller class our babies among the brutes?

Prof. Max Müller says (*The Monist*, p. 585):

"If, like Professor Romanes, we begin with the 'immense presumption that there has been no interruption in the developmental process in the course of psychological history,' the protest of language counts for nothing; the very fact that no animal has ever formed a language, is put aside simply as an unfortunate accident."

The theory of evolution rightly understood is no presumption in the usual sense of the word. It is no more a presumption than to say that something cannot come from nothing. And what is "the protest of language" which would disprove the continuity of evolution? That rational or human thought is something *sui generis*, that it is different in kind and not in degree from brute intelligence; that language is an impassable barrier between man and brute, being the Rubicon which no other animal has crossed. Very well. We agree entirely with all these propositions. Human reason is different in kind from brute intelligence and human reason has developed such as it is through language only. Nay reason is language. Noiré is right when he says, Man thinks because he speaks. But the Rubicon of language was not an absolutely impassable barrier. The speechless ancestor of man, whether we call him *homo alalus* or anthropoid, or even man-ape, *has* crossed it, and having crossed it he became the Cæsar of the animal creation.

Prof. Max Müller's theory of the identity of language and thought* is so valuable because it bridges the gap between the rational sphere of man and the not-yet rational sphere of the brute creation. It explains the origin of reason. The origin of reason in the world of living beings is explained as soon as the origin of language is understood, for reason develops with language and rational thought is nothing but rational speech. If the origin of language were an unfathomable mystery, Prof. Max Müller's view of the identity of language and thought would lose all practical importance.

The proposition of the identity of language and thought is a very radical idea; it is the fundamental idea of monism. In a more general form it was first pronounced by Giordano Bruno, who says

* I should prefer to speak of the oneness or inseparableness of thought and language, but since Prof. Max Müller has sufficiently explained himself, I use here his term "identity" in the sense of inseparableness as it is used by Prof. Max Müller.

somewhere that, if we could put the soul of a man into the organism of an animal, say of a snake, it would cease to be a human soul and become the soul of a snake. Speech would be changed into a hissing, in accordance with the snake's organs for uttering sounds. And in the same way all the feelings, all the concepts, all the desires and inclinations—in short the whole psychical life would be that of a snake.

Thought is the soul of language. As there are no ghost-souls, so there are no ghost-thoughts. And the soul is not something distinct from the organism, it is the form of the organism. It happens in fairy-tales that the Prince is transformed into a frog, but if a fairy could transform a man into a frog, his soul would certainly also become a frog-soul. Language is the visible organism of the invisible thought, and as is language, exactly so is thought.

The problem how language has developed was first answered by the onomatopoetic theory, "the bow-wow theory" as Max Müller calls it. Language was conceived as an echo of nature, as a reflex action that takes place in a living and feeling being. Yet this theory had to be abandoned, because an historical investigation of language proved that words with very few exceptions were not imitations of external sounds. Yet the spirit of investigation was not daunted by this defeat, and the bow-wow theory reappeared in a modified form. Language was still considered as a reflex action; however, it was conceived to be a reflex which re-echoed the impressions of natural phenomena as they had affected man. This was the exclamation theory which seeks the origin of language in the "ohs and ahs," the sighs and shouts of a feeling mind. Prof. Max Müller calls this theory "the pooh-pooh theory." This theory had also to be discarded because it was in conflict with the actual facts of the evolution of language. Next Noiré and Prof. Max Müller came with their theory, called by Noiré "the synergistic theory," which conceives language as the expression of common work, also called by Noiré the Logos theory, the sympathetic theory, and the causality theory. Prof. Max Müller in order to forestall any deriders of this theory suggests calling it "the yo-he-ho theory," yo-he-ho being the sailors' song when engaged in some common work as hoisting or hauling.

This yo-he-ho theory actually explains the origin of language, and it is, so far as we can see, not in conflict with any historical or philological facts. But in honor of the inventors of the onomatopoeic theory it must be recognised that the main idea of the yo-he-ho theory is the same as that of the bow-wow theory. The main idea is this : Language did not originate in man's mind out of itself in some mysterious way representing a break in the continuity of evolution, but it is a certain reflex-action of living and feeling beings taking place in consequence of external stimuli. This reflex-action however is not direct, but indirect. It is not that of a single being, it is the reflex-action of a whole society, engaged in common work. It developed in consequence of their common activity and through their want of intercommunication.

* * *

Prof. Max Müller charges against the evolutionist, that "the very fact that no animal has ever formed a language is put aside simply as an unfortunate accident." Is this a fair reprehension? Is not the fact that no animal, except man, crossed the Rubicon of language quite a distinct problem? And accepting Professor Noiré's theory of the origin of language which considers speech as the product of a common activity accompanied by what may be called *clamor concomitans*, I see very good reasons why other animals did not develop language. First, there is no animal, with the sole exception perhaps of ants and bees, that lives in societies. Some of them live in herds, but there is a great difference between a herd and a society. This difference is first a difference of degree, but gradually it becomes a difference of kind. Secondly, animals have no organs to work with, while man has his hands, and we may add, thirdly, that no animal, not even the parrot, has the same power of articulation.

Prof. Ludwig Noiré accepts without equivocation the idea that the speechless ancestor of man became a rational being by developing language and I was always under the impression that Prof. Max Müller agreed with his late friend not only concerning the identity of language and reason, but also concerning the origin of reason. But if Prof. Max Müller agrees with Noiré, why does he object to

the continuity of evolution which as he states in a private letter to us is "only a beautiful postulate"?

Now there are indeed facts which prove that the Rubicon of reason is not so impassable to animals as Prof. Max Müller makes us believe. Let us hear Noiré on the subject. He explains most logically that man performs his many labors and has become a civilised being only with the help of language, by naming things and handling them in his mind. Noiré says :

"It can be graphically shown, how ideas may represent for man the rôle of things real; how man has acquired the power of combining in his representative faculty the most remote objects, and thereby has been able to accomplish the great miracles of human industry and commerce. But all this would be utterly inconceivable without concepts, which impart to percepts their unity and self-dependence, bring about and multiply their rational connection. Hence also, no animal can ever advance a single step beyond *present* perceptive representation, can never escape from the constraint with which Nature circumscribes the narrow sphere of its wants. Unfortunately, however, in apparent contravention of this rule, ants to the present day carry on a regular and methodical species of agriculture, keep livestock and domestics like we! Nay, they have been caught in conversations and social entertainments of a quarter of an hour's duration—God save the mark! *

This passage is full of humor, and the humor is slightly mingled with a comical anger and self-irony. There is a fine theory excellent in every respect worked out in all its details by the Professor and now he finds a few trifles of facts which possess the impudence not to adapt themselves to the theory. "*Gott besser's*," sighs Noiré, for it is not his fault that the ants accomplish things which they ought not to, and the good Lord is called upon to adapt nature with more rigidity to the Professor's theories.

Is there not an obvious reason why ants stand so high in their performances? Are not ants social beings, more so than any other animal? We are ignorant still of all their means of communication. But that they have some means of communication seems to be an established fact. When ants from different hills but of the

* *The Logos Theory*, by Ludwig Noiré. Translated from the German. *The Open Court*, iii. p. 2196. English translations of Noiré's most important articles concerning the origin of language, have appeared in Nos. 33, 137, 139, 141, 142 of *The Open Court*.

same kind give each other battle, it happens not unfrequently that a warrior attacks another warrior of the same people most fiercely, but both let go as soon as they touch each other with their feelers.* I refrain from telling stories about the life of these wonderful creatures partly because one well-authenticated report is sufficient for our purpose and partly because I must suppose that most of my readers are familiar with the facts as presented by Darwin, Lubbock, Forel, Huber, and many others. I will add only one observation which is so far as I know undisputed. If ants of a special kind rob the larvæ of another kind and educate them as their slaves, the slaves will in case of war or danger stand by their masters even against their own folks. They evidently speak the language of the hill in which they have been raised.

Professor Forel successfully made the experiment, with the assistance of ant-nurses, of raising together several kinds of ants from the larvæ of hostile species. The ferocious Amazons and the Sanguineæ did not show any enmity toward their comrades of the Præterensis and Rufa. When set at liberty and transferred to a new residence they remained together and behaved exactly as if they naturally belonged together. And this experiment may be quoted to corroborate the proposition of Prof. Max. Müller that "thought is thicker than blood."†

Now it would be a desperate case for Professor Noiré to maintain his theory in the face of these facts, if by language we have to understand vocal signs only. Yet the idea of his and also of Prof. Max Müller's theory consists in the truth that thoughts cannot walk about like ghosts in bodiless nudity: they are a system of notation. As such they are symbolised in signs and are inseparable from their signs. These signs are sounds with men, and by words we understand usually sound-symbols. But there are other systems of nota-

* That ants communicate with each other through their antennæ is an undeniable fact. But Landois believes that they communicate also through sounds. Some ants possess in their stridulation-organ a kind of a rattle the sound of which, however, is perceptible to the human ear only in the *Ponera* ants.

† See *Three Lectures on the Science of Language*, p. 47. The Open Court Publishing Co., Chicago.

tion besides vocal signs and they are for that reason not less language than speech. We have reason to believe that ants are in possession of symbolical signs and that most of them are communicated through their feelers.

Professor Romanes describes the origin of ideas (in the second chapter of "Mental Evolution in Man," p. 23) in the following way :

"Just as Mr. Galton's method of superimposing on the same sensitive plate a number of individual images gives rise to a blended photograph, wherein each of the individual constituents is partially and proportionally represented ; so in the sensitive tablet of memory, numerous images of previous perceptions are fused together into a single conception, which then stands as a composite picture, or class-representation, of these its constituent images. Moreover, in the case of a sensitive plate it is only those particular images which present more or less numerous points of resemblance that admit of being thus blended into a distinct photograph ; and so in the case of the mind, it is only those particular ideas which admit of being run together in a class that can go to constitute a clear concept.

Professor Romanes calls such a composite picture of sense-impressions as must be supposed to exist in the animal brain "a receipt" and he distinguishes it from "the concept" of man. He says : "Reception means a *taking again*. . . . The word 'receipt' is seen to be appropriate to the class of ideas in question, because in receiving such ideas the mind is passive." By "concept" however he understands "that kind of composite idea which is rendered possible only by the aid of language or by the process of naming abstractions as abstractions."*

We agree with Professor Romanes in the main point, viz. that the process of evolution must be considered as uninterrupted, but we cannot agree with him on several minor points.†

We must express our doubt concerning the propriety of calling the mind passive when receiving impressions. Every single sensation is an active process, just as much as a reflex motion, and it may

*Prof. Lloyd Morgan introduces several new terms, which seem well coined. The mental product which is called the object of sense he calls "construct"; the most prominent feature in a composite sense-image, he calls the "predominant"; and if the predominant is named and isolated by abstraction he calls it an "isolate."

† An impartial criticism of Professor Romanes's position has been made by Prof. Lloyd Morgan in his recent work *Animal Life and Intelligence*.

be considered as a reaction that takes place in response to the stimulus of the impression. Conception of course is also an active process, and concepts, the products of conception, establish a new department in the mind. "Noiré, quoted by Prof. Max Müller, says: 'All trees hitherto seen by me leave in my imagination a mixed image, a kind of ideal presentation of a tree. Quite different from this is my concept, which is never an image.' " *

And this is true.

We have on another occasion explained that sensations are sense-impressions which have acquired meaning.† Rays of light are reflected from an object and fall upon the retina of an eye. Here they produce a disturbance of nervous substance which is transmitted to the brain where it is felt as the image say of a tree. Now the ether-waves are not sight, but a certain form of ether-waves corresponds to a certain form of sight, and the latter comes to stand for the former. The mental picture of a tree becomes a symbol for a special object outside of us and it is projected to the place where experience has taught us to expect that object. In naming objects we repeat the process of expressing by symbols. Sensations are symbols, and names are symbols of symbols. The name and concept tree is not the composite picture of all the trees I have seen, but it is the symbol of this composite picture of sense-impressions. Sensations are like the chords of a piano and the concepts are like the keys. The key is different in kind from the chord which belongs to it. When I touch the key the chord will sound: when I pronounce a name the composite sensation of all its analogous memories will be awakened.

* * *

Can there be any question that difference in kind can originate by degrees? Professor Romanes uses the phrase "different in kind" as synonymous with "different in origin" and therefore declares that human reason and animal intelligence are "different in degree"

* This quotation is requoted from Prof. Lloyd Morgan, *Animal Life and Intelligence*, p. 325.

† *The Origin of Mind*, in *The Monist*, Vol. I. No. I.

only. The word "kind," it is true, is at least as vague as the word species and a naturalist may often be doubtful where to draw the line. Man and monkey are different in kind, and they are also more different in origin than Carl Vogt assumed, for man is not the descendant of any of the monkey families now existent. But this does not disprove that they are of a still remoter common origin or at least that they originated in the same way in some amoeboid form as simple life-substance.

New formations which originate through combining are as much new creations, i. e. things new in kind, as if they were produced through special-creation acts of God which are said to be creations out of nothing and not mere transformations.

Man builds houses out of bricks and timbers. Is not the house something different in kind from the trees and the clay from which the materials have been taken? Is not the boiler of a steam-engine different in purpose and accordingly also different in kind from a tea-kettle? Is not every invention something different in kind? And is not the same true of the products of thought? Is not a triangle something different in kind from a line? And the origin of the former is not more miraculous than that of the latter. A triangle is more complex than a line, but its existence in the mind is not more of a mystery than the existence of the line. Difference in kind need not include difference of origin. Harmony is different in kind from melody. Notes in succession produce melody, while simultaneous notes produce harmony. In either case it is simply a matter of combination.

Professor Romanes when speaking of the passivity of sense-impressions seems to think of the unconsciousness of the process. We are not conscious of the transformation of impressions into sensations while we can become aware of our efforts to change the sense-material into concepts. Yet the nature of mind is throughout activity. And no one has perhaps insisted more strongly on the activity of mind than Prof. Max Müller. But Prof. Max Müller distinguishes between the activity of the mind and the ego which as he supposes performs that activity. He says ("Science of Thought," p. 63):

"We think of a mind dwelling in a body, and we soon find ourselves in the midst of psychological mythology. Let it be clearly understood, therefore, that by Mind I mean nothing but that working which is going on within, embracing sensation, perception, conception, and naming, as well as the various modes of combining and separating the results of these processes for the purpose of new discovery.

"But if Mind is to be the name of the work, what is to be the name of the worker? It is not yet the Self, for the Self, in the highest sense, is a spectator only, not a worker; but it is what we may call the Ego, as personating the Self; it is what other philosophers mean by the Monon, of which, as we shall see, there are many. Let us call therefore the worker who does the work of the mind in its various aspects, the Monon or the Ego."

And in another passage (l. c., p. 552) he speaks of the simplicity of the monon:

"If then the process of thought is so simple as we saw, not less simple, at least, than that of speech, it follows, that the complicated apparatus which had been postulated by most philosophers for the performance of thought in its various spheres of manifestation, must make room for much plainer machinery. Instead of intuition, intellect, understanding, mind, reason, genius, judgment, and all the rest, we want really nothing but a self-conscious Monon, capable of changing all that is supplied by the senses into percepts, concepts, and names. These changes may be represented as something very marvellous, and we may imagine any number of powers and faculties for the performance of them."

"Grant a Monon conscious of itself, and conscious therefore of the impacts made upon it or the changes produced in it by other Mona which it resists, and, we require little more to explain all that we are accustomed to call Thought."

The continuity of evolution naturally holds good according to Max Müller for the natural man, but not for the Self.

How is this? Is the monon perhaps conceived as not-natural or outside of nature. Hardly. For Prof. Max Müller speaks of the object also as being a monon.* If the objects are as much mona as the subjects the same laws must hold good for both, and the subject-monon must be supposed to be an object-monon if considered in its relation to other object-mona.

If Prof. Max Müller's protest against the continuity of evolution is not based upon the dualism of natural and extra-natural mona, what can it mean when he says that evolution does not hold good for the Self?

*L. c., p. 281. "So much about the subject or the monon. What now about the objects or the mona?"

If the Self is conceived as a monon, i. e. something "alone" like an atomic unit, it can have no evolution. Evolution is change of form through the production of new configurations. A monon or an isolated unit considered by itself cannot evolve. It is as it ever has been and will be—a monon.

If this is Prof. Max Müller's meaning, we must ask, How does he know that the self is a monon and that objects are mona? Do they not, if so conceived, become highly mysterious entities? New mona are constantly born into this world. Whence do they come? Is every birth of a child the new creation of another monon by the creator, who so distributes the babes in the world that like babes are given to like parents thus producing the wrong impression of heredity as well as of a continuity of evolution? The idea of explaining all the activities of the mind by the postulate of a conscious monon is very simple indeed, but the problems which would arise from this postulate are extremely complex, and it seems to us that after all the proposition of evolution is by far the simplest solution of all the difficulties.*

Mind as we conceive it is the product of evolution. Mind has been evolved in a world which (judging from its product) must be conceived as being freighted not only with energy but also with the

* Prof. Max Müller is a great admirer of Kant and so am I. But it appears to me that we differ greatly in what we accept as the essential teachings of the master; and I grant willingly that Prof. Max Müller has preserved the doctrines of Kant more faithfully than I. I have attempted to modernise Kant. If I am called a Kantian (and I do not object to the name, on the contrary I am proud of it) it is because I proceed from Kant and I attempt to preserve the spirit of Kant's philosophy rather than his doctrines. For the sake of the spirit of Kantian philosophy I have seen myself urged to surrender the idea of the thing-in-itself as something unknowable. Prof. Max Müller has preserved in his philosophy (for such is the *Science of Thought*) the Ding-an-sich theory. Believing in things-in-themselves he must consistently believe in a self or monon, for this monon is nothing but the thing-in-itself of the soul.

I have limited myself in the present article to the principle of continuity in evolution as a point of divergence between Prof. Max Müller and the views defended by *The Monist*. If I attempted at present to enter into the philosophical problem of things-in-themselves, I should be obliged to tax too much the patience of my readers. But as I am convinced that the reason of our difference with Prof. Max Müller concerning the continuity of evolution lies deeper still, I intend to treat the subject of things-in-themselves in a future number.

potentiality of feeling. Mind, as we know it in experience, is no monon, no indivisible unit, but a unitary system of feelings and thoughts produced through external impressions upon one part of the world by the rest of the world which surrounds it. Mind is an abstract term ; it does not denote a part of the world, but a certain quality of a part of the world, viz. the feelings and thoughts of special kinds of organisms. Mind is produced through external impressions, but it does not consist merely of external impressions. Mind, as we have stated before, is not passive ; it is active. It consists of the reactions which take place in response to impressions and also of the accumulated products of these reactions. Thus every mind is the concentrated effect of the whole cosmos upon one special part of the cosmos, not as it takes place in one moment, but as it has taken place in a definite and continuous period up to date. The accumulation of these effects makes the mind grow and expand and the system of the growth constitutes its specific character. We can as little think of the mind as appearing suddenly by an act of special creation as we can think that an oak tree can be created out of nothing or that it can exist without previous growth. The law of continuity holds good as much in the realm of the human mind as in the domain of animal and plant-life.

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So far we have borne in mind the philosophical and scientific aspect only of the continuity of evolution. There is another aspect however of no less importance, that is the religious view of the subject. We do not believe that science and religion are two different spheres of thought and that something may be true in science which is not true in religion. Since the theory of evolution has revolutionised almost all our sciences, we ask, what influence must this change of thought exercise upon religion ? Is not the religious idea of God destroyed and the whole system of religion overturned ?

We think not. An old and very powerful system of theology which has been considered as orthodox for centuries will become untenable as soon as the idea of evolution and the continuity of evolution are recognised in their sweeping importance ; but religion itself will enter into a new phase of evolution and the idea of God

will not be cast aside as a mere superstition of the Dark Ages, it will be purified and appear in a greater and sublimer, in a nobler, higher, and in a truer conception than ever before.

The idea of God is an historical heirloom of past ages. The religious man and the philosopher of all times have tried to put into it their highest, their best, their grandest, and their purest emotions as well as thoughts. And these thoughts were not meaningless, they were not mere fancies. They contained the quintessence of their conception concerning that feature of reality which has produced us as living, thinking, and aspiring beings, and which still prompts us to aspire to higher aims. The world which has produced other beings and ourselves, cannot be and is not a meaningless congeries of material particles in motion. It is a living cosmos. It is a grand harmonious universe pregnant with mind, and nothing in it is suffered to exist for any length of time but that which conforms to its laws; and that which conforms to its laws we call moral.

The idea of God, however, as it is commonly taught in our schools is full of pagan notions, and the very paganism of the present God-idea is often supposed to be its deepest and holiest meaning. No wonder that atheism increases with the progress of science! And why should not atheism increase, if it is truer than a superstitious theism? Atheism I believe will increase more and more until theism is cleansed of its pagan notions. But atheism will not come to stay, for atheism is a mere negative view and negations have no strength to live. They have power to criticise and they will serve as a leaven in the dough. Their purpose is the purification of the positive views. Negations will pass away as soon as their purpose is fulfilled.

The old pagan conception (now considered as orthodox) places God in the dark nooks and crevices of our knowledge. Wherever science fails and wherever our inquiring mind is entangled in problems which we cannot hope to solve, wherever the continuity of nature and of the order of nature is hidden from our intellectual sight, the so-called orthodox believer comes forth and declares: "This is a holy place. Here is the finger of God's special interference!" Consider what a degrading view of God this is! The place of dark-

ness is conceived as an actual break in the order of the world and this break is supposed to be a special revelation of God! If we trust in truth, we need not shun the light of science and the God of science—in contradistinction to the pagan notion of God—reveals himself in the discoveries of science. God lives not in darkness but in light, and his existence is proved not through the breaks in nature (which we can be sure do not exist, and wherever they appear are due to our ignorance) but through the order of nature, for God *is* the order of nature. God is that power through which we exist as living, thinking, and aspiring beings, and to which we have to conform in order to live.

When Darwin speaks of “life as having been originally breathed into a few forms or into one *by the Creator*,” he either uses allegorical language or he means that the beginning of life was an act of special creation. He apparently means the latter and is in this respect not a consistent evolutionist. Darwin was great as a reformer of natural science, but in theology he still stood upon the old standpoint. He calls God to rescue where science fails. The Creator did not originally breathe life into the organism, but his breath is constantly ensouling all living beings. Now suppose there were or there could be exceptions to the law of causation, to the conservation of matter and energy, or to the continuity of evolution, would that not rather be a drawback in nature? Are the patches on a coat better proof that it was made by a tailor than the whole coat? Any kind of theology which still recognises special-creation acts, or miracles, or breaks in evolution, we do not hesitate to say, is not yet free from paganism, for it still sticks to the religious conception of the medicine-man that God is a great magician. The God of the medicine-man lives in the realm of the unknown and he appears in man’s imagination where the light of science fails. The God of science however is the God of truth, and evidence of his existence is not found in the darkness of ignorance but in the light of knowledge. God’s being is not recognised in the seeming exceptions to natural laws, but in the natural laws themselves. God’s existence is not proved by our inability to trace here or there the order of cause and effect, as if a disorder in the world made it divine; on the con-

trary the only rational ground of a faith in God is the irrefragable cosmic order of the universe. It is true that we have to give up the idea of a personal God, but is not a superpersonal God greater than the idol which we have made unto our own likeness?

The God of science is perhaps more in agreement with the biblical God than the God of dogmatic theology. The interpretations of biblical passages which are at present generally considered as orthodox are (merely from the standpoint of impartial exegetics) untenable. The first chapter of Genesis has not one word about special-creation acts. Neither the Elohim nor the Jahveh-Adonai account declares that in the beginning there had been Nothing. Both accounts (Gen. Chap. I. 1 to II. 3, and II. 3 et seqq.) agree that God "shaped" the world. The word *barah* (to shape, to form, to make) is nowhere used in the sense of creating out of nothing. The Psalmist says, "By the word of the Lord were the heavens made," which was so interpreted in the New Testament that it meant "by the logos," and the gospel of St. John adds *καὶ Θεὸς ἦν ὁ λόγος*, i. e. and the word was God. Logos means rational speech or reason, and the world-reason through which the heavens were made can mean only the cosmic order of the universe. This idea of St. John's thought out to its ultimate conclusions means monism.

There is a common error that scientific progress is dangerous to religion. Scientific progress is dangerous to superstition only. Religion (i. e. true religion) is not based upon our ignorance, but upon our knowledge; it is not a child of the darkness but of the light, and faith far from being a mere belief, i. e. the imperfect knowledge of an opinion for which no proof is forthcoming, is applied knowledge, it is knowledge plus the confidence that this knowledge can be made the basis of ethics and the supreme rule for regulating our conduct in life. The history of religion has been and is still a constant purification of our religious ideas, and the crucible in which the religious ideas are purified is science. We are slowly but constantly progressing toward a high religious ideal and this ideal is a cosmical religion free from the pagan notions so severely criticised by Christ and yet so carefully preserved by the Christian churches. This

cosmical religion will be the religion of science. It will not consist of religious indifference nor of a toleration of any and every opinion as is so often erroneously proclaimed as the ideal of liberalism. On the contrary it will be in a certain sense the most orthodox religion, for its maxim will be to stand on the truth and nothing but the truth. And the truth is not at all indifferent or tolerant. The truth is extremely intolerant and suffers no error beside it, although, as a matter of course, the truth is very tolerant in so far as it sanctions no violence but employs only the spiritual sword of conviction by argument and logical proof.

We have given up the idea of special acts of creation as the calling forth disconnectedly of something out of nothing. We conceive the whole world as an orderly cosmos, well regulated by laws and evolving the forms of life in agreement with its laws. Is there less divinity in a cosmos than in a half chaotic world in which God makes exceptions and counteracts his own ordinances? Is the idea of creation less religious if it ceases to mean an origination of something out of nothing? Is not man at least just as wonderful if evolved step by step out of the dust of the earth through innumerable stages in the long process of evolution as if he were made directly out of clay? And is there less divinity in his soul, is he any less shaped unto the image of God because his growth took place according to natural laws? Natural laws, in the conception of purified religion, of the religion of science, are nothing but the ideas of God, eternal and immutable, and formulated by scientists not on the ground of special revelations but on the ground of the universal and unchangeable, and throughout consistent revelation of God in his works.

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The science of language and the science of life are two important highroads to the cognition of truth. That both sciences will be consistent with each other, that their results will finally be seen to harmonise perfectly is beyond all doubt and also that their bearing upon religious ideas will contribute much to their purification. Prof. F. Max Müller and Prof. George John Romanes are two great scholars, each one is a leader in his own branch of knowledge, and

where they come in conflict, it appears to us, that they rather complement than refute each other. Both are strong Monists, although emphasising different sides of Monistic truth and we feel convinced that their very differences will help us to elaborate more fully and clearly and more comprehensively the great truth of Monism—of that Monism which will more and more be recognised as the cornerstone of science and also of the religion of science.

EDITOR.